

Listing of Claims

The following listing of claims will replace all prior versions, and listings, of claims in the subject application:

Claim 1 (cancelled).

2. (previously presented) The semiconductor device according to claim 19, wherein said saturable absorbing layer comprises at least one of As and P.

3. (currently amended) The semiconductor device according to claim 19, wherein said active layer, and said first and second cladding layers ~~and saturable absorbing layer~~ comprise AlGaInP alloy materials.

4. (previously presented) The semiconductor device according to claim 19, wherein said saturable absorbing layer comprises an AlGaInNP alloy material.

5. (previously presented) The semiconductor device according to claim 19, wherein said cladding layer comprises AlGaInP and wherein an AlGaInP intermediate layer is interposed between said cladding layer and said saturable absorbing layer, said intermediate layer containing less Al than said cladding layer and no nitrogen.

6. (currently amended) The semiconductor device according to claim 19, wherein said semiconductor device comprises a self-pulsating semiconductor laser device ~~is designed for use in an optical disk system.~~

7. (withdrawn) An optical disk system comprising a self-pulsating semiconductor laser device.

8. (withdrawn) The optical disk system according to claim 7, wherein said self-pulsating semiconductor laser device comprises:  
a semiconductor substrate of a first conductivity type;  
a first cladding layer of said first conductivity type formed on said semiconductor substrate;  
an active layer formed on said first cladding layer;  
a second cladding layer of a second conductivity type formed on said active layer; and  
a saturable absorbing layer formed on at least portions of at least one of said first cladding layer and said second cladding layer, said saturable absorbing layer being formed to have a band gap energy either approximately the same as, or slightly smaller than, said the active layer, and also to be doped with a high concentration of N.

9. (withdrawn) The optical disk system according to claim 8, wherein said saturable absorbing layer comprises N a group-V element.

10. (withdrawn) The optical disk system according to claim 8, wherein said active layer, first and second cladding layers and said saturable absorbing layer comprise AlGaInP alloy materials.

11. (withdrawn) The optical disk system according to claim 8, wherein said saturable absorbing layer comprise an AlGaInNP alloy

material.

12. (withdrawn) The optical disk system according to claim 8, wherein at least said cladding layer comprises AlGaInP and an AlGaInP intermediate layer is interposed between said cladding layer and said saturable absorbing layer, said intermediate layer containing less Al than said cladding layer and no N.

13. (previously presented) A semiconductor device comprising:  
a semiconductor substrate of a first conductivity type;  
a first cladding layer of said first conductivity type formed on said semiconductor substrate;  
an active layer formed on said first cladding layer;  
a second cladding layer of a second conductivity type formed on said active layer; and  
a saturable absorbing layer formed on at least portions of at least one of said first cladding layer and said second cladding layer, wherein said saturable absorbing layer is a mixed crystal of nitrogen (N) with another group-V element and is formed to have a band gap energy either approximately the same as, or slightly smaller than, said active layer.

14. (previously presented) The semiconductor device according to claim 13, wherein said saturable absorbing layer comprises at least one of As and P.

15. (currently amended) The semiconductor device according to claim 13, wherein said active layer, and said first and second cladding

layers and ~~saturable absorbing layer~~ comprise AlGaInP alloy materials.

16. (original) The semiconductor device according to claim 13, wherein said saturable absorbing layer comprises an AlGaInNP alloy material.

17. (previously presented) The semiconductor device according to claim 13, wherein said cladding layer comprises AlGaInP and wherein an AlGaInP intermediate layer is interposed between said cladding layer and said saturable absorbing layer, said intermediate layer containing less Al than said cladding layer and no nitrogen.

18. (previously presented) The semiconductor device according to claim 13, wherein said semiconductor device comprises a self-pulsating semiconductor laser device.

19. (previously presented) A semiconductor device comprising:  
a semiconductor substrate of a first conductivity type;  
a first cladding layer of said first conductivity type formed on said semiconductor substrate;  
an active layer formed on said first cladding layer;  
a second cladding layer of a second conductivity type formed on said active layer; and

a saturable absorbing layer formed on at least portions of at least one of said first cladding layer and said second cladding layer, wherein said saturable absorbing layer is formed to have a band gap energy either approximately the same as, or slightly smaller than, said active layer, and also to be doped with nitrogen (N) in an amount

sufficient to form a localized level; and

said saturable absorbing layer includes a III-V alloy material.

20. (previously presented) A semiconductor device comprising:  
a semiconductor substrate of a first conductivity type;  
a first cladding layer of said first conductivity type formed on said semiconductor substrate;  
an active layer formed on said first cladding layer;  
a second cladding layer of a second conductivity type formed on said active layer; and

a saturable absorbing layer formed on at least portions of at least one of said first cladding layer and said second cladding layer,

wherein said saturable absorbing layer is a mixed crystal of nitrogen (N) with another group-V element, and a band gap of said mixed crystal of nitrogen (N) with another group-V element is reduced by adding nitrogen; and

said saturable absorbing layer is formed to have a band gap energy either approximately the same as, or slightly smaller than, said active layer.

21. (previously presented) The semiconductor device according to claim 19, wherein said first cladding layer and said second cladding layer comprise one or more group-V elements selected from a group consisting of As, P, and Sb; and

said first cladding layer and said second cladding layer do not substantially include nitrogen.

22. (previously presented) The semiconductor device according

to claim 13, wherein said first cladding layer and said second cladding layer comprise one or more group-V elements selected from a group consisting of As, P, and Sb; and

said first cladding layer and said second cladding layer do not substantially include nitrogen.